z/OS

Resource Measurement Facility Reference Summary

SX33-9033-01

Second Edition, October 2001

This is a major revision of SX33-9033-00.

This edition applies to Version 1 Release 2 of z/OS (5694-A01) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Contents

Preface

The RMF Reference Summary provides a quick reference to:

- Operator commands
- Monitor I session options
- Monitor II background session options
- Monitor II display commands
- Monitor III gatherer session options
- Monitor III reporter session commands

For detailed information about using RMF Monitors, see *RMF User's Guide*.

How to read the diagrams

To read a syntax diagram, follow the path of the line, starting from left to right and moving from top to bottom.

- The ▸▸—— symbol indicates the beginning of a syntax diagram.
- The ——▸ symbol, at the end of a line, indicates that the syntax diagram continues on the next line.
- The ▸—— symbol, at the beginning of a line, indicates that a syntax diagram continues from the previous line.
- The ——▸◂ symbol indicates the end of a syntax diagram.

Syntax items (for example, a keyword or variable) may be:

- Directly on the line (required)
- Above the line (default)
- Below the line (optional)

Symbols

You **must** code these symbols exactly as they appear in the syntax diagram

Number sign

: Colon

, Comma

= Equal Sign

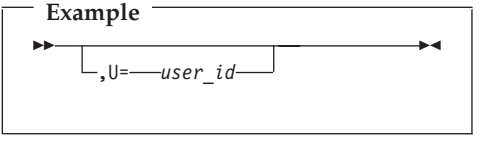
- Hyphen

( ) Parenthesis

. Period

Variables

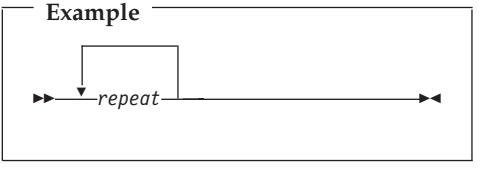
Highlighted lowercase letters denote variable information that you must substitute with specific information.



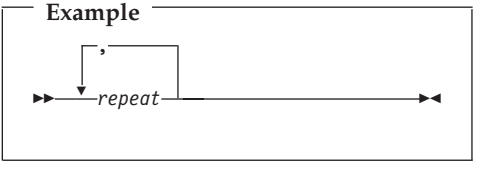
Here you must code `U=` as shown and supply an ID for user_id. You may, of course, enter `U` in lowercase, but you must not change it otherwise.

Repetition

An arrow returning to the left means that the item can be repeated.



A character within the arrow means you must separate repeated items with that character.



A footnote (1) by the arrow references a limit that tells how many times the item can be repeated.

Example

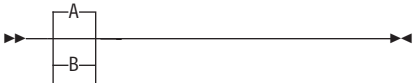
Notes:

1 Specify *repeat* up to 5 times.

Defaults

Defaults are above the line. The system uses the default unless you override it. You can override the default by coding an option from the stack below the line.

Example



In this example, `A` is the default. You can override `A` by choosing `B` or `C`.

Required Choices

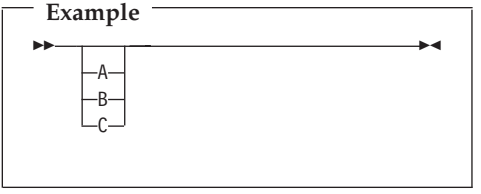
When two or more items are in a stack and one of them is on the line, you **must** specify one item.

Example

Here you must enter either `A` or `B` or `C`.

Optional Choice

When an item is below the line, the item is optional. Only one item **may** be chosen.



Here you may enter either A or B or C, or you may omit the field.

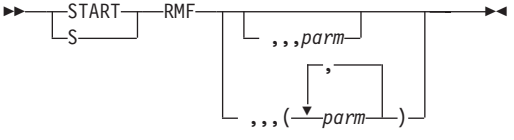
Chapter 1. Gathering Reference

This chapter contains a summary of the operator commands, the Monitor I session options, and the Monitor III session options.

To Start, Stop and Control Sessions

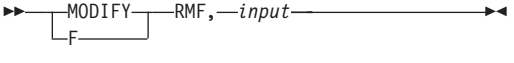
Three system commands, four session commands, and numerous display commands control RMF processing. The syntax for system and session commands is as follows; see chapters on specific RMF sessions in *RMF User's Guide*, for detailed descriptions and examples.

START system command



Initializes RMF and/or starts a Monitor I session.

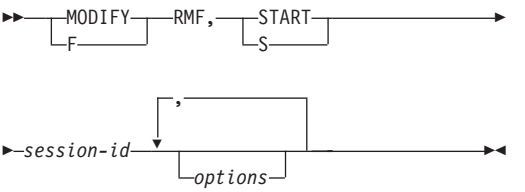
MODIFY system command



Passes session commands to RMF or requests a display of RMF status.

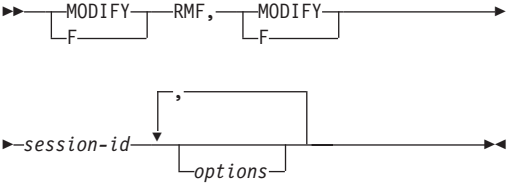
The following session commands are passed to RMF through the input field of the system MODIFY command.

START session command



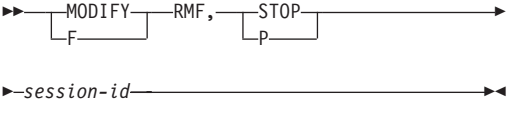
Starts an RMF session.

MODIFY session command



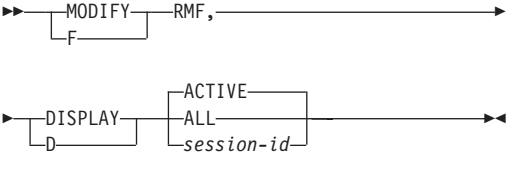
Changes options currently in effect.

STOP session command



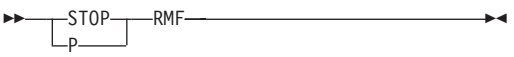
Ends processing of a specified session.

DISPLAY session command



Displays status information for active non-TSO/E RMF sessions.

STOP system command



Ends all non-TSO/E RMF sessions.

where:

parm
Options for a Monitor I session (specify NOZZ if you do not want to start a Monitor I session concurrently with RMF initialization). Options have the form:

```
option[(value)]
```

input
Any session command (START, STOP, MODIFY, or DISPLAY).

session-id
Session identifier for a particular session. The session identifier is one of the following:

ZZ	Monitor I session
cc	Monitor II background session (any two characters except ZZ)
III	Monitor III data gatherer session

options

Session options to be changed. Each option has the form

```
option[(value)]
```

and must be separated by a comma.

ACTIVE
Session identifiers of all active non-TSO/E sessions are to be displayed.

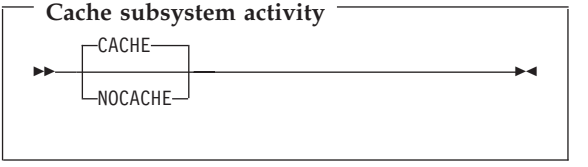
ALL
Session identifiers and current options of all active non-TSO/E sessions are to be displayed.

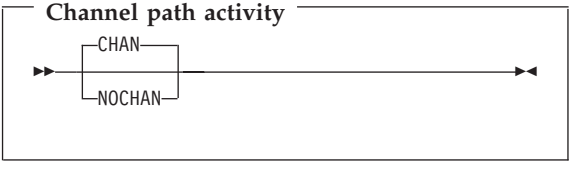
Monitor I Session Options

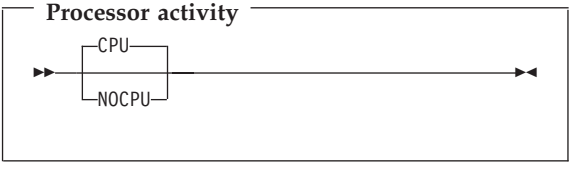
You can specify Monitor I session options in:

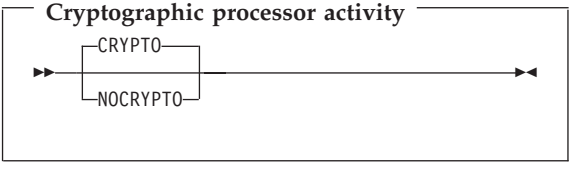
- The **parm** field of the START command
- The PARM field of the EXEC statement in a cataloged procedure

- The RMF Monitor I Parmlib member ERBRMF00

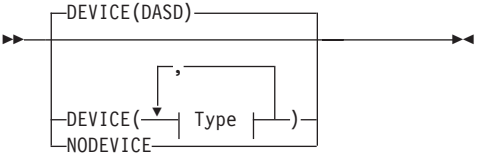




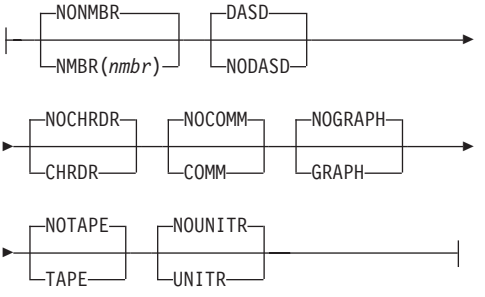




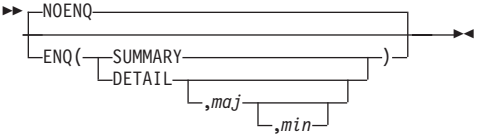
Device activity



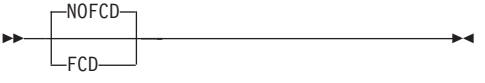
Type:



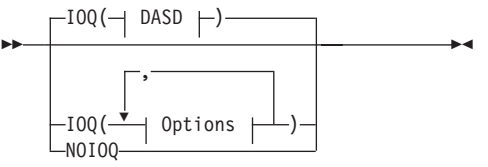
Enqueue contention activity



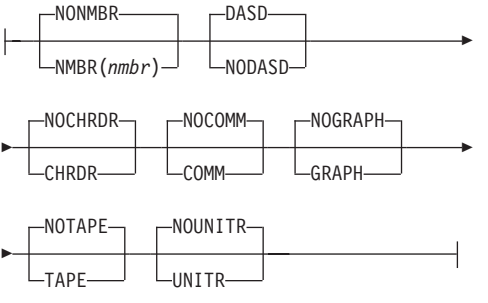
FICON director activity



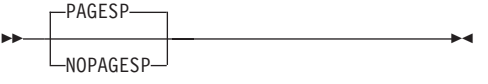
I/O queuing activity



Options:

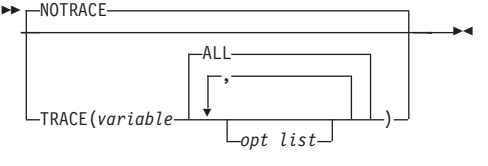


Page data set activity

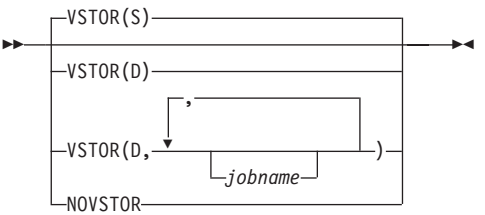


System paging activity

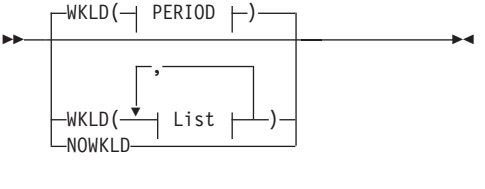
Trace activity



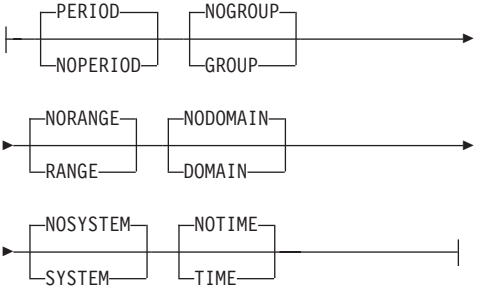
Virtual storage activity



Workload activity

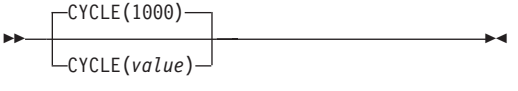


List:

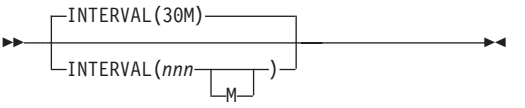


Time-frame Options

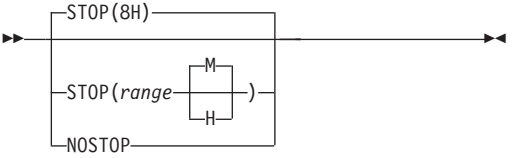
Cycle length



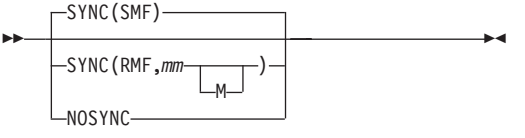
Report interval length



Duration of session

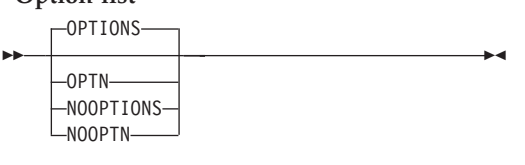


Interval synchronization



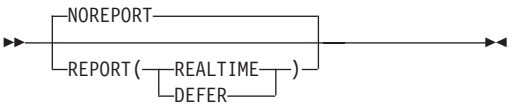
Reporting Options

Option list

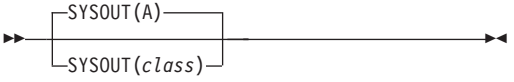


Write SMF record

Print interval reports



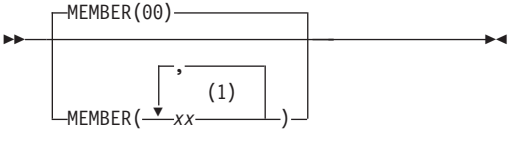
Class for printed reports



Environment Options

User exit

Parmlib member

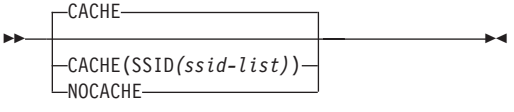


Notes:

1 Up to five members can be specified.

Monitor III Session Options

Cache subsystem activity



Specifies measurements for cache subsystem activity.

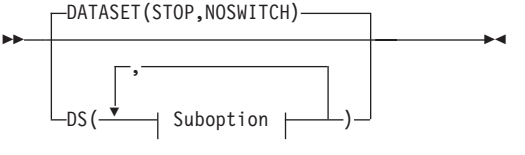
Coupling facility details

Specifies whether detailed data gathering for the activities in the coupling facility should be performed.

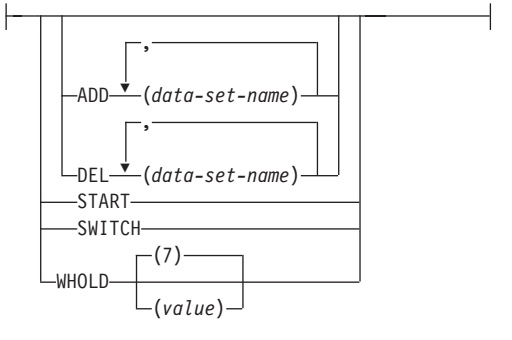
Gatherer cycle

Specifies, in milliseconds, the length of a cycle. Valid range is 50 to 9999.

Data set support

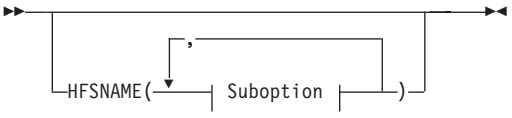


Suboption:

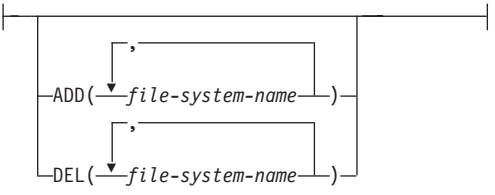


Controls the recording of samples to user-defined data sets.

Hierarchical file system activity



Suboption:

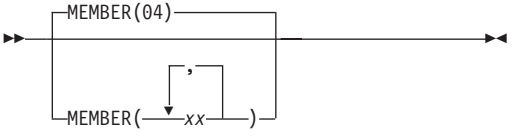


Specifies data recording of statistics for UNIX HFS names.

I/O subsystem activity

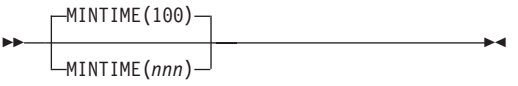
Specifies data recording for I/O subsystem and channel path activity.

Member



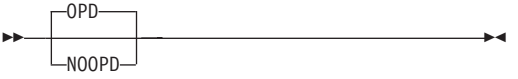
Specifies the members of a partitioned data set that contain the options to be used for the session.

Mintime



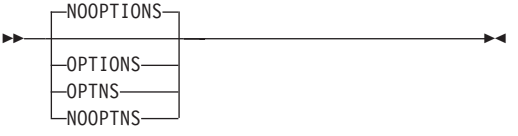
Specifies interval length in seconds. Valid range is 10 to 999.

OMVS process data



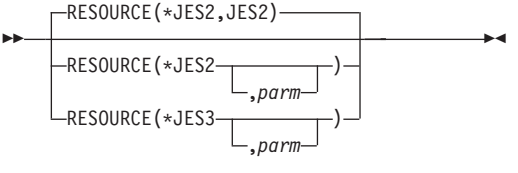
Specifies measurements for OMVS process data.

Print list of options



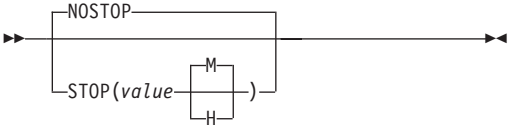
Specifies if options are to be displayed at operator console.

Resource



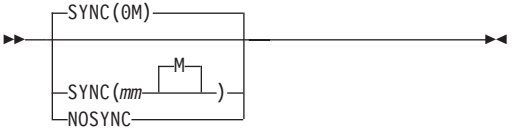
Specifies the job entry subsystem resource where *parm* is the given name if other than JES2 or JES3.

Duration of session



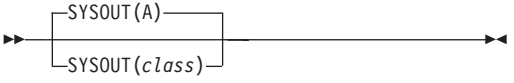
Specifies the duration of the session in minutes (M) or hours (H). Valid range is 1 minute to 168 hours.

Synchronous write SMF



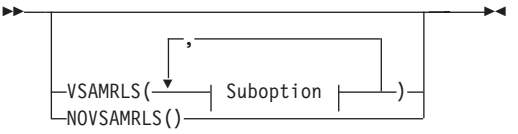
Synchronizes interval time with the hour where mm is the number of minutes after the hour at which synchronization will occur.

Sysout

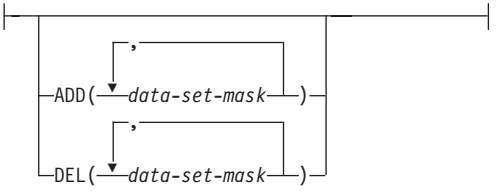


Specifies the output class for session messages.

VSAM RLS activity

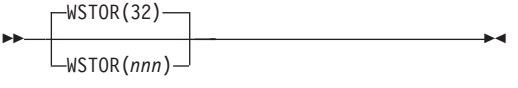


Suboption:



Controls the collection of VSAM RLS activity data.

Storage buffer



Specifies in megabytes, the maximum storage buffer size. Valid range is 4 to 999 megabytes.

Chapter 2. Reporting Reference

This chapter contains a summary of the commands used in a reporting session.

To Start RMF in ISPF or TSO/E

To start RMF and display the RMF Performance Management menu, enter:

Start RMF

To bypass the RMF Performance Management Menu, enter the RMF command with the appropriate option:

Start RMF Monitor

To call the Postprocessor, enter:

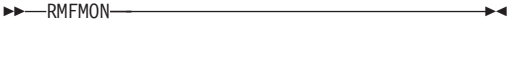
To call Monitor II, enter:

To call Monitor III, enter:

To call the Monitor III Utility, enter:

Start RMF Monitor II

You can also use the following command to start Monitor II:



Monitor II Display and Background Session

Use the display session syntax in an ISPF or TSO/E session to obtain snapshot reports of specific address spaces or system resources.

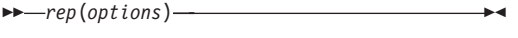
Use the background session syntax in a non-interactive session to create a printed report and SMF records.

Report Commands and Options

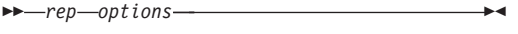
The general format of a command to request a report is:

General syntax

Background session syntax:



Display session syntax:

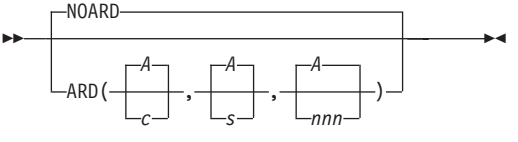


rep is the report name, and *options* are the options for the report.

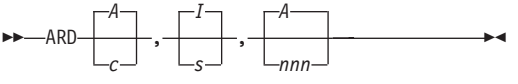
For the legend, see page 2-9.

AS resource data

Background session syntax

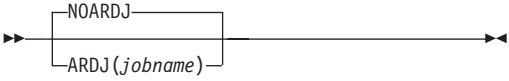


Display session syntax



AS resource data for job

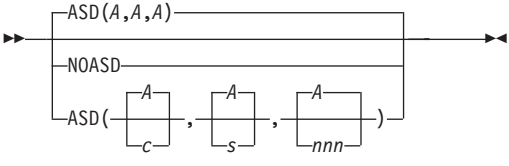
Background session syntax



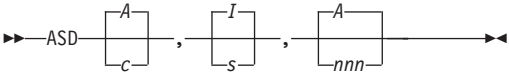
Display session syntax

AS state data

Background session syntax

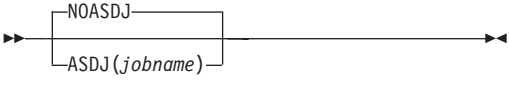


Display session syntax

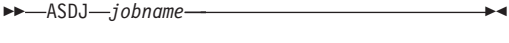


AS state data for job

Background session syntax

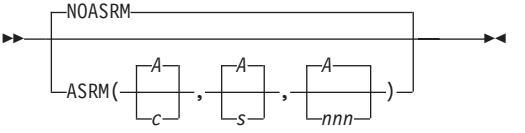


Display session syntax

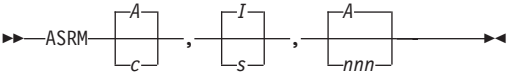


AS SRM data

Background session syntax

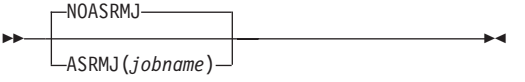


Display session syntax



AS SRM data for job

Background session syntax



Display session syntax

Channel path activity

Background session syntax

Display session syntax

Domain activity

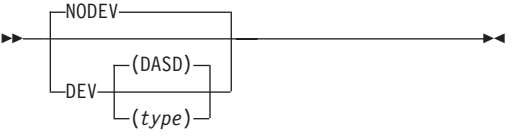
Background session syntax

Display session syntax

This option is accepted in compatibility mode only.

Device activity

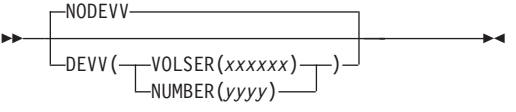
Background session syntax



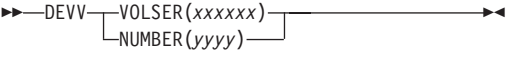
Display session syntax

Specific direct access device

Background session syntax



Display session syntax



HFS statistics

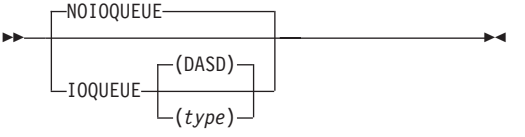
Display session syntax

IRLM long lock detection

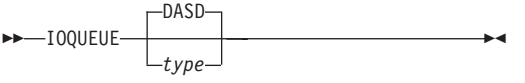
Display session syntax

I/O queuing

Background session syntax

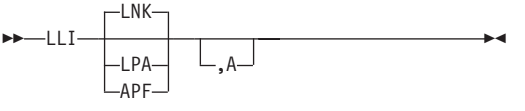


Display session syntax



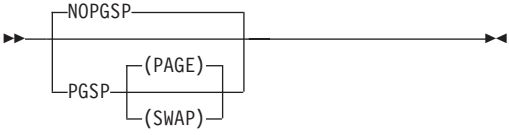
Library lists

Display session syntax

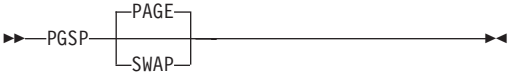


Page/Swap data set activity

Background session syntax



Display session syntax

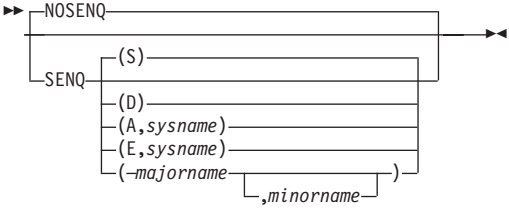


Sysplex data server activity

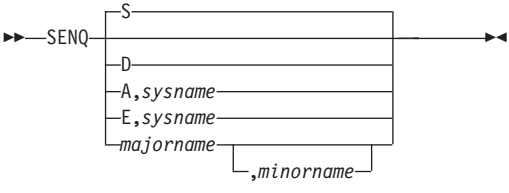
Display session syntax

Enqueue contention activity

Background session syntax

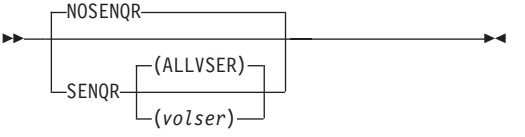


Display session syntax

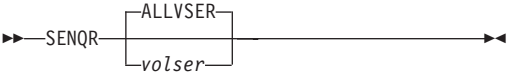


Reserve activity

Background session syntax

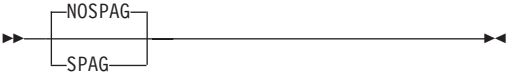


Display session syntax

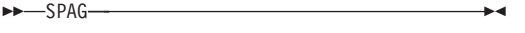


System paging activity

Background session syntax



Display session syntax



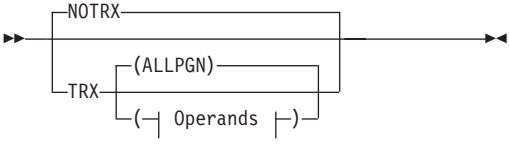
SRM activity

Background session syntax

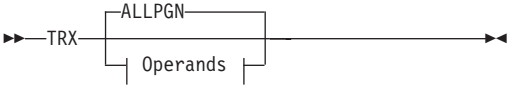
Display session syntax

Transaction activity

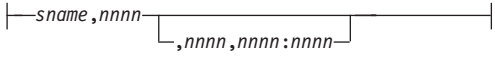
Background session syntax



Display session syntax

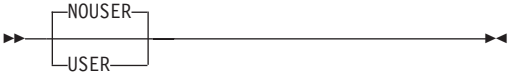


Operands:



This option is available in compatibility mode only.

User-specified activity



Legend:

c Class of the address spaces to be included; either A, B, T, AS, or O.

s Status of the address spaces to be included; either A or I.

d Domain of the address spaces to be included; either A or a domain number.

hfsname
Name of an hierarchical file system.

jobname
Specific job name.

majorname[,minorname]
Name of resource or group of resource.

nnnn
1-4 digit performance group number.

sname
Subsystem name defined in the ICS definition.

sysname
Name of a specific system in a global resource serialization complex.

type
Either a device class, one or more volume serial numbers, one or more device numbers, or one or more SG names.

volser
Volume serial number.

Display Session Commands

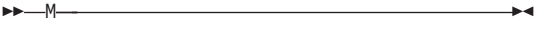
What session commands you use depends on whether you are working with the ISPF interface or the TSO interface. Some commands are valid in both environments.

For the legend, see page 2-13.

TSO Commands

Scroll through a table report:

Display the list of reports on the display menu:



Display defaults:

Print a report:

Request reports repeatedly:

where:

n is the number of times a report is repeated.
t is the number of seconds between reports

Stop the session:

Set PF key:

rep is a report name.

ISPF Commands

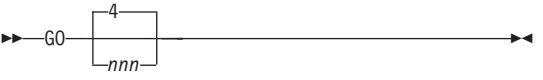
Cancel the option dialog without saving changes:

List of Monitor II reporter commands:

Find a text string:

If your search string contains blanks, you must enclose it in quotes.

Refresh a report after an interval:



where:

nnn is the number of seconds between refreshes. Valid values are between 1 and 3600s.

End GO mode by pressing the ATTN or PA1 key.

Print a report:

Reset all optional values on the option dialog to their defaults:

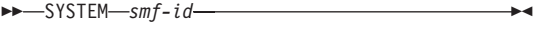
Repeat a previously entered Find command:

Show the report options panel for the current report:

Sort the report according to column cursor is placed on:

Note: Numerical columns are sorted in descending order, and columns with character values are sorted in ascending order.

Specify the system to be monitored:



Stop the session:

Both ISPF and TSO Commands

Set delta mode:

Set hardcopy mode:

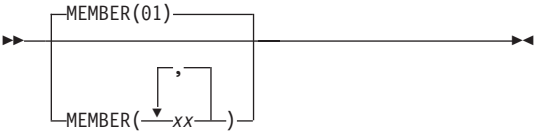
Recall the previous report:

where *rep* is the report name.

Background Session Options

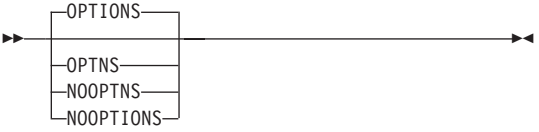
Delta reporting:

Session options Parmlib member:

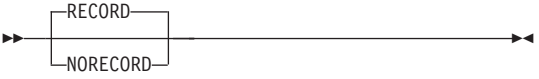


Note: You can specify up to five members.

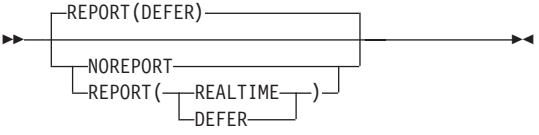
Print list of options:



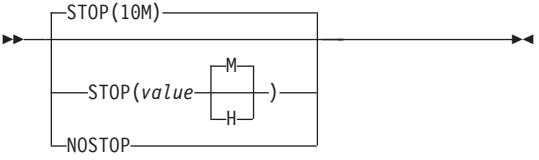
Write SMF data set:



Print interval reports:

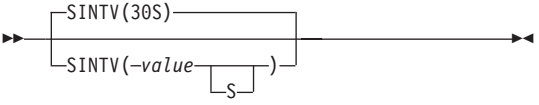


Duration of Monitor II session:



Class for printed reports:

Number of seconds in interval:



where:

class
is a SYSOUT class

value
is a 1-5 digit number that specifies time in either minutes (M) or hours (H)

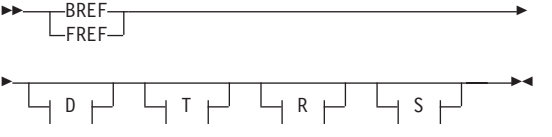
AS address space

Monitor III Reporter Session

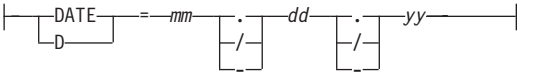
To start a Monitor III session, from TSO or ISPF, enter:

Session Commands

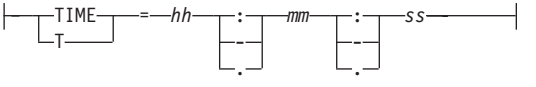
Backward/forward referencing:



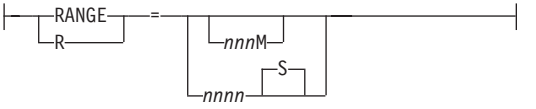
D:



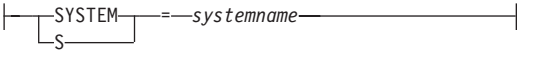
T:



R:



S:



Restore options to original values:

Display RMF commands help panel:

Display data from current range:

```
►►──CURRENT──────────────────────────────────────────►◄
```

Search for character string:

```
►►──FIND──string─────────────────────────────────────►◄
```

Start GO mode:

```
►►──GO───────────────────────────────────────────────►◄
```

Switch graphic mode on or off:

```
           ┌─ON──┐
►►──GRAPHIC─┼─────┼──────────────────────────────────►◄
           └─OFF─┘
```

Print hardcopy reports and screens:

```
             ┌─ON─────┐
►►──HARDCOPY─┼────────┼──────────────────────────────►◄
             ├─OFF────┤
             ├─SCREEN─┤
             └─REPORT─┘
```

Start an Interactive Chart Utility session:

```
►►──ICU──────────────────────────────────────────────►◄
```

Display listing of PF keys:

```
►►──PFK──────────────────────────────────────────────►◄
```

Reset options to RMF defaults:

```
►►──RESET────────────────────────────────────────────►◄
```

Display last command entered:

```
►►──RETRIEVE─────────────────────────────────────────►◄
```

Repeat FIND command:

```
►►──RFIND────────────────────────────────────────────►◄
```

Switch between tabular and graphic mode:

```
           ┌─ON──┐
►►──TABULAR─┼─────┼──────────────────────────────────►◄
           └─OFF─┘
```

Switch between tabular and graphic mode:

```
►►──TOGGLE───────────────────────────────────────────►◄
```

Commands to Request Menus and Option Panels

Display Color Graphic Options panel:

```
►►──COLOR────────────────────────────────────────────►◄
```

Display Job Report panel:

```
▸▸—JOBS———————————————————————————▸◂
```

Display Language Options panel:

```
▸▸—LANGUAGE———————————————————————▸◂
```

Display Options panel:

```
▸▸—OPTIONS————————————————————————▸◂
```

Display Option Set panel:

```
▸▸—OPTSET—————————————————————————▸◂
```

Display Overview Report menu:

```
▸▸—OVERVIEW———————————————————————▸◂
```

Display Report Options panel of current report:

```
▸▸—ROPTIONS———————————————————————▸◂
```

Display Resource Report menu:

```
▸▸—RESOURCE———————————————————————▸◂
```

Display Session Options panel:

```
▸▸—SESSION————————————————————————▸◂
```

Display Subsystem Report menu:

```
▸▸—SUBS———————————————————————————▸◂
```

Display Sysplex Report menu:

```
▸▸—SYSPLEX————————————————————————▸◂
```

Display User-written Report menu:

```
▸▸—USER———————————————————————————▸◂
```

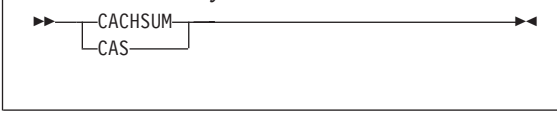
Report Commands

Reports can be requested from the command line or from the Primary menu.

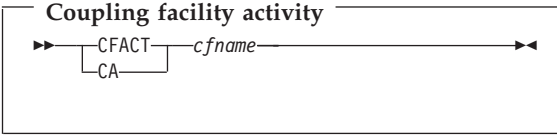
Cache details

```
▸▸—┬CACHDET┬—┬———┬—————————————————▸◂
   └CAD————┘ └ssid┘
```

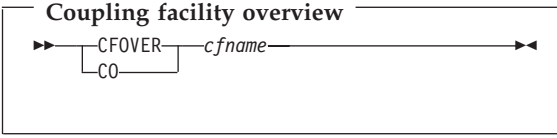
Cache summary



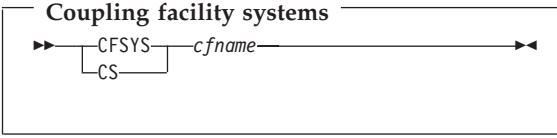
Coupling facility activity



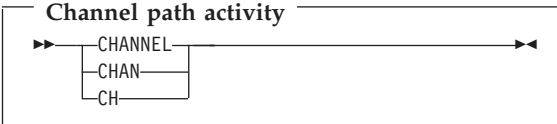
Coupling facility overview



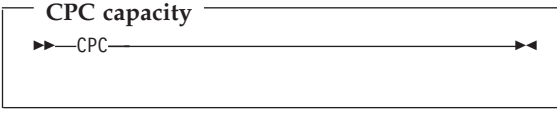
Coupling facility systems



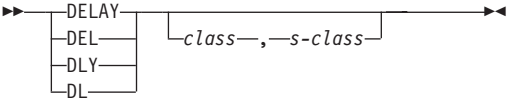
Channel path activity



CPC capacity

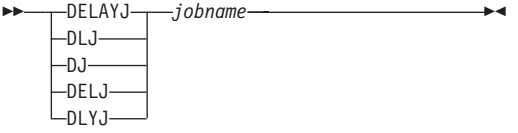


Delays

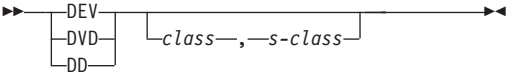


You can specify a class and a selection separated by a comma.

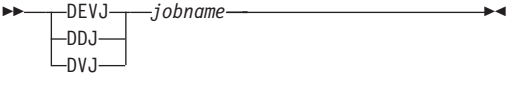
Job variation of delay



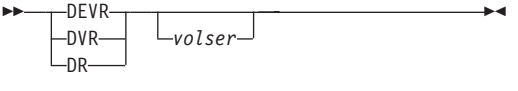
Device delays



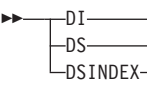
Device delays - Job report



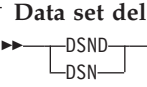
Device delays for resources



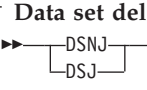
Data index



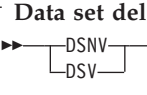
Data set delays



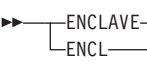
Data set delays - Job report



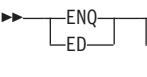
Data set delays - Volume report



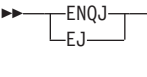
Enclave activity



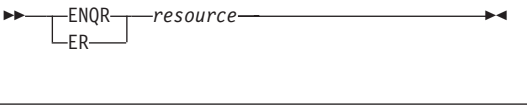
Enqueue delays



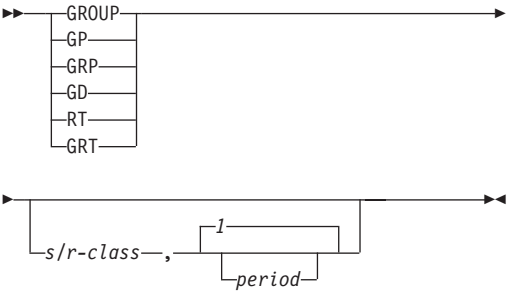
Enqueue delays - Job report



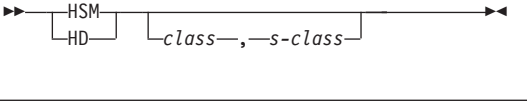
Resource delays



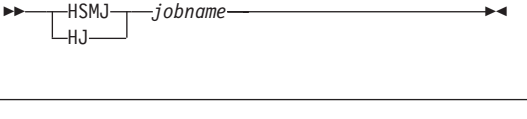
Group response time



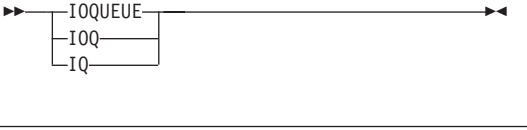
HSM delays



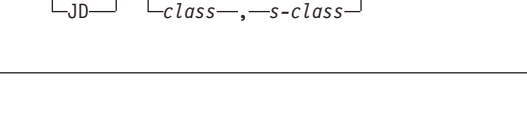
HSM delays - Job report



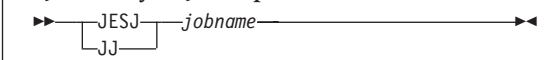
I/O queuing activity



JES delays

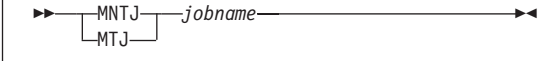


JES delays - Job report

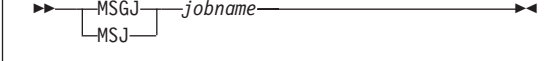


Job report

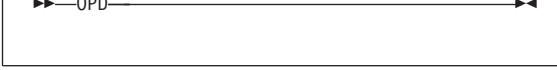
Mount delays - Job report



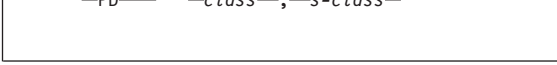
Message delays - Job report



OMVS process data

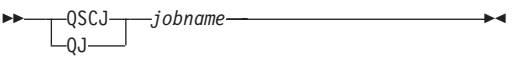


Processor delays

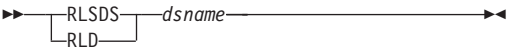


Processor delays - Job report

Quiesce delays - Job report



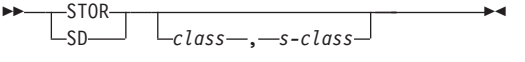
VSAM RLS activity by data set



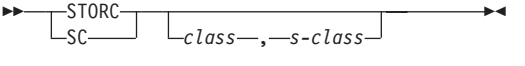
VSAM LRU statistics

VSAM RLS activity by storage class

Storage delays

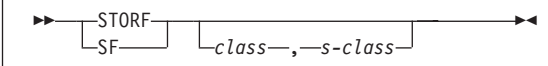


Common storage information

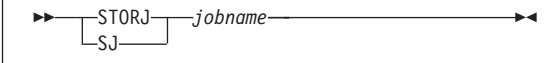


Common storage remaining

Frame count information



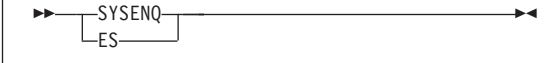
Storage delays - Job report



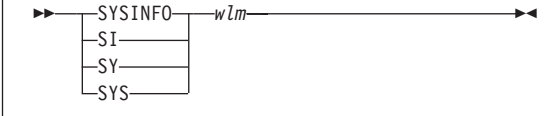
Information on storage use

Summarized storage information

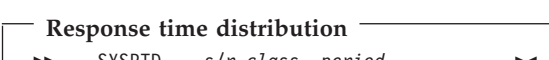
Sysplex-wide enqueue delays



Overview of system workload

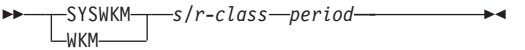


Response time distribution



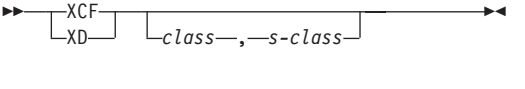
Performance summary - Sysplex

Work manager - Sysplex

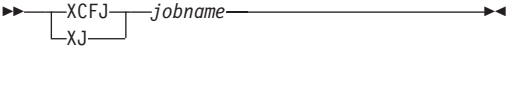


Overview of system activity

XCF delays



XCF delays - Job report



where:

cfname	Name of a coupling facility.
class	Either All (A), Batch (B), TSO (T), STC (S), ASCH (AS), or O (OMVS). For DELAY, you can also specify E for enclaves.
dsname	Name of a data set.
jobname	Name of job to be reported.
period	Service or report class period.
resource	Name of resource to be reported.
s-class	Service class name.

| **s/r-class** | Service or report class name.
| **ssid** | Cache subsystem identifier.
| **sstype** | Name of a subsystem that schedules enclaves.
| **stclass** | Storage class name.
| **volser** | Volume serial number.
| **wlm** | Name of a workload group, service class, or report class.

| **Note:** For systems running in compatibility mode, the terms s-class, s/r-class, and wlm have to be replaced by DMNnnn (domain) or PGnnn (performance group).

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SX33-9033-01